UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/733,995	12/11/2003	Reza Ghasemi	N0484.70571US00	2044

23628 7590 07/14/2009

WOLF GREENFIELD & SACKS, P.C.
600 ATLANTIC AVENUE
BOSTON, MA 02210-2206

EXAMINER	
GODBOLD, DOUGLAS	
ART UNIT	PAPER NUMBER
2626	
MAIL DATE	DELIVERY MODE
07/14/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/733,995	GHASEMI ET AL.	
	Examiner	Art Unit	
	DOUGLAS C. GODBOLD	2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 2 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 May 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is in response to correspondence filed May 13, 2009 in reference to application 10/733,995. Claims 1-17 are pending and have been examined.

Response to Amendment

2. The Amendment filed May 13, 2009 has been accepted and considered in this office action. Claims 1-14 have been amended and claim 17 added.

Response to Arguments

3. Applicant's arguments with respect to claims 1-17 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 101

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. Claims 13-17 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claims 13-17 are directed towards a system comprising various interfaces. However, when interpreted in light of the specification, specifically paragraph 0032, this system can be interpreted as a software only embodiment. Therefore claims 13-17 are rejected as being non-statutory.

Claim Rejections - 35 USC § 103

6. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

extracting a current grammar (text words in the recognition model to be evaluated) from the voice system (a portion of training text is selected to be spoken 304, Figure 3, Column 5 line 11.);

7. Claims 1 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mahajan et al. (US Patent 7,117,153) in view of in view of Guerra (US PAP 2002/0188,451)

8. Consider claim 1, Mahajan teaches a method of evaluating grammars associated with a voice system (figure 2, shows a method for evaluating recognition in a voice system such as figure 1, connected to Wide area Network 173, that could be used to access data.), said method comprising:

generating a test input for a current grammar of the voice system, the test input including a test pattern(At step 202, a portion of training data 304 is spoken by a person 308 to generate a test signal, in order to test the recognition models; Column 5 line 11.);

providing the test input to the voice system (voice recognition system software) (The acoustic signal is converted into waveforms by receiver 309 and feature extractor 310, and the feature vectors are provided to a decoder 312; column 5 lines 13-15.);

analyzing the test pattern with respect to a set of active grammars corresponding to the current grammar with a speech recognition engine in the voice system, the current grammar being one grammar of the set of active grammars (At step 204, the predicted sequence of speech units is aligned with the actual sequence of speech units from training data 304; column 5. line 37. The current grammar is the word currently being tested); and

deriving a measure of quality of recognition for the current grammar (Under one embodiment, this objective function is an error function that indicates the degree to which the predicted sequence of speech units differs from the actual sequence of speech units after the alignment is complete; column 5, lines 44-47.).

But Mahajan does not specifically teach that the voice system is a voice portal.

In the same field of speech systems, Guerra teaches that the voice system is a voice portal (voice portal system, figure 4 and abstract.)

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention for a voice portal to be the voice system being tested and developed as taught by Guerra with the testing system of Mahajan in order to facilitate the desired feature of Guerra on the fly grammar updates (Guerra 0108).

Mahajan and Guerra do not specifically teach deriving a measure of how distinguishable the current grammar is from other grammars of the set of active grammars based at least in part on the analysis of the test pattern.

In the same field of speech recognition, Shao teaches deriving a measure of how distinguishable the current grammar is from other grammars of the set of active grammars based at least in part on the analysis of the test pattern (Figure 4, paragraph 0046, ambiguity ratio determine how distinguishable best fit is from second best fit).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the art to use an ambiguity ratio as taught by Shao in the system of Mahajan and Guerra in order to help determine if the grammar has be successfully recognized.

9. Consider claim 2, Shao teaches the method of claim 1, wherein deriving a measure of how distinguishable the current grammar is from other grammars of the set of active grammars includes deriving a confidence level and a set of n-best results for the test input (paragraph 0046, best match in compared with 2^{nd} best, which is n-best, where n=2), and wherein the method further comprises comparing the confidence level and set of n-best results for the test input with an expected value to assess the measure of how distinguishable the current grammar is from other grammars of the set of active grammars (paragraph 0046, best match score and ambiguity ratio).

10. Consider claim 7, Mahajan teaches a computer readable storage medium encoded with instructions (figure 1 shows memories 141, 151, 152, 155, and 156

capable of storing the computer code) which, when executed by a computer cause the computer to perform a method of evaluating grammars associated with a voice system (figure 2, shows a method for evaluating recognition in a voice system such as figure 1, connected to Wide area Network 173, that could be used to access data) , the method comprising:

generating a test input for a current grammar of the voice system, the test input including a test pattern (At step 202, a portion of training data 304 is spoken by a person 308 to generate a test signal; Column 5 line 11.);

providing the test input to the voice system (speech recognition system of figure 1) (The acoustic signal is converted into feature vectors by receiver 309 and feature extractor 310, and the feature vectors are provided to a decoder 312; column 5 lines 13-15.);

analyzing the test pattern with respect to the set of active grammars corresponding to the current grammar with a speech recognition engine in the voice system, the current grammar being one grammar of the set of active grammars (At step 204, the predicted sequence of speech units is aligned with the actual sequence of speech units from training data 304; column 5. line 37.); and

deriving a measure of quality of recognition for the current grammar (Under one embodiment, this objective function is an error function that indicates the degree to which the predicted sequence of speech units differs from the actual sequence of speech units after the alignment is complete; column 5, lines 44-47.)

But Mahajan does not specifically teach that the voice system is a voice portal.

In the same field of speech systems, Guerra teaches that the voice system is a voice portal (voice portal system, figure 4 and abstract.)

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention for a voice portal to be the voice system being tested and developed as taught by Guerra with the testing system of Mahajan in order to facilitate the desired feature of Guerra on the fly grammar updates (Guerra 0108).

Mahajan and Guerra do not specifically teach deriving a measure of how distinguishable the current grammar is from other grammars of the set of active grammars based at least in part on the analysis of the test pattern.

In the same field of speech recognition, Shao teaches deriving a measure of how distinguishable the current grammar is from other grammars of the set of active grammars based at least in part on the analysis of the test pattern (Figure 4, paragraph 0046, ambiguity ratio determine how distinguishable best fit is from second best fit).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the art to use an ambiguity ratio as taught by Shao in the system of Mahajan and Guerra in order to help determine if the grammar has be successfully recognized.

11. Claim 8 is directed towards a computer readable storage medium designed to execute a method similar to the method of claim 3 and is therefore rejected for similar reasons.

12. Claims 3, 4, 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mahajan et al. in view of in view of Guerra in view of Shao as applied to claims 1 and 7 above and further in view of Yuschik (US Patent 7,139,706).

13. Consider claim 3, Mahajan, Guerra, and Shao does not specifically teach modifying the current grammar to create a modified grammar if the derived measure deviates from a pre-determined range

In the same field of grammar modification, Yuschik teaches modifying the current grammar to create a modified grammar (word list to be used for recognition) if a measure deviates from a pre-determined range (figure 3, step 340 does an acoustic analysis to determine similarity in order to reduce recognition error, step 350 selects alternative words if necessary, thereby providing a less confusable alternative to the words available to be recognized; column 11 line 34- column 13 line 3).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use the grammar modification as taught by Yuschik with the system of Mahajan and Guerra and Shao in order to facilitate the desired recognition grammar updating contemplated in Yuschik 0100-0108.

14. Consider claim 4, Mahajan and Guerra and Shao suggests the method of claim 3, further comprising the steps of:

(i) generating a test input for the modified grammar, the test input including a test pattern for the grammar (Mahajan At step 202, a portion of training data 304 is spoken

by a person 308 to generate a test signal, in order to test the recognition models; Column 5 line 11.);

(ii) providing the test input for the modified grammar to the voice portal () (Mahajan, the acoustic signal is converted into waveforms by receiver 309 and feature extractor 310, and the feature vectors are provided to a decoder 312; column 5 lines 13-15.);

(iii) analyzing the test pattern for the modified grammar with respect to the set of active grammars corresponding to the modified grammar with the speech recognition engine in the voice portal the modified grammar being one grammar of the set of active grammars corresponding to the modified grammar (At step 204, the predicted sequence of speech units is aligned with the actual sequence of speech units from training data 304; column 5. line 37);

(iv) deriving a measure how distinguishable the modified grammar is from other grammars of the set of active grammars corresponding to the modified grammar (Shao, Figure 4, paragraph 0046, ambiguity ratio determine how distinguishable best fit is from second best fit, it would have been obvious to one of ordinary skill in the art at the time of the art to use an ambiguity ratio as taught by Shao in the system of Mahajan and Guerra in order to help determine if the grammar has be successfully recognized); and

Mahajan and Guerra and Shao do not suggest that these steps are complete on modified grammar, and

(v) re-modifying the modified grammar and repeating steps (i) through (iv) until the measure of quality of recognition of the modified grammar does not deviate from a pre-determined range.

In the same field of updating grammars, Yuschik suggests that these steps are complete on modified grammar, and

(v) re-modifying the modified grammar and repeating steps (i) through (iv) until the measure of how distinguishable the modified grammar is from other grammars of the set of active grammars corresponding to the modified grammar does not deviate from a pre-determined range. (This is merely reanalyzing the output of the recognizer after the grammar has been updated. Figure 3 of Yuschik shows that the acoustical analysis of 340 is repeated until the acoustical difference is great enough to allow for accurate speech recognition.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use this step of repeated analysis as taught by Yuschik in the system of Mahajan and Guerra and Shao as it would be useful to determine the recognizably of any alternative words entered into the grammar by the modifying step, thereby insuring that the change increased the performance of the recognizer.

15. Claim 9 is directed towards a computer readable storage medium designed to execute a method similar to the method of claim 3 and is therefore rejected for similar reasons.

16. Claim 10 is directed towards a computer readable storage medium designed to execute a method similar to the method of claim 4 and is therefore rejected for similar reasons.

17. Claims 5, 6, and 11-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mahajan in view of Guerra and Shao as applied to claims 1 and 7 above and further in view of Randic (US Patent 6,275,797).

18. Consider claim 5, Mahajan and Guerra and Shao teaches the method of claim 1, but does not specifically teach modifying the test pattern to emulate one or more user voices prior to entering the test input into the voice portal.

In the same field of speech testing, Randic suggests modifying the test pattern to emulate one or more user voices prior to entering the test input into the voice portal (Figure 1 shows using a voice test file generated by a TTS engine used to test the voice path using recognition. This is a similar technique used to test the quality of recognition in Mahajan. Using a computer generated voice to generate the test file, Column 3 line 27, would inherently allow the test pattern to emulate whatever voice the computer generation system was configured to produce. Further, it is well known in the art that TTS engines can be configured to allow for the generation of multiple voice types, although the claim language suggest that just one voice could be used.).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use the computerized speech generation as taught by Randic in

place of the human speaker as taught by Mahajan and Guerra and Shao in order to allow the speech recognizer to become more flexible through the quality analysis.

19. Consider claim 6, Mahajan and Guerra and Shao teaches the method of claim 1, but does not specifically teach modifying the test pattern to emulate the influence of one or more communications network qualities prior to entering the test input into the voice portal.

In the same field of speech testing, Randic teaches modifying the test pattern to emulate the influence of one or more communications network qualities prior to entering the test input into the voice portal (figure 3 shows passing the voiced speech pattern through a transmission scheme in order to evaluate the effect that the voice channel has on recognition; column 4, line 31- column 7 line 29.).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the analysis of the voice channel as taught by Randic with the speech recognition quality evaluation of Mahajan and Guerra and Shao in order to make the speech recognizer more robust.

20. Claim 11is directed towards a computer readable storage medium designed to execute a method similar to the method of claim 5 and is therefore rejected for similar reasons.

21. Claim 12 is directed towards a computer readable storage medium designed to execute a method similar to the method of claim 6 and is therefore rejected for similar reasons.

22. Consider claim 13, Mahajan teaches a system for evaluating grammars of a voice system having a speech recognition engine (figure 3), comprising:

a test pattern generator for generating a test input for each current grammar of a set of current grammars of the voice portal, the test input including a test pattern (At step 202, a portion of training data 304 is spoken by a person 308 to generate a test signal; Column 5 line 11.); ;

an apparatus for entering each test pattern into the voice system (At step 202, a portion of training data 304 is spoken by a person 308 to generate a test signal; Column 5 line 11.);

a results collector for analyzing each test pattern entered into the voice system with the speech recognition engine against the set of active grammars corresponding to the current grammar for a respective test patter, the current grammar being one grammar of the set of active grammar (At step 204, the predicted sequence of speech units is aligned with the actual sequence of speech units from training data 304; column 5. line 37.); and

a results analyzer for deriving a set of statistics of a quality of recognition of each current grammar (Under one embodiment, this objective function is an error function that indicates the degree to which the predicted sequence of speech units differs from

the actual sequence of speech units after the alignment is complete; column 5, lines 44-47.).

But Mahajan does not specifically teach that the voice system is a voice portal.

In the same field of speech systems, Guerra teaches that the voice system is a voice portal (voice portal system, figure 4 and abstract.)

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention for a voice portal to be the voice system being tested and developed as taught by Guerra with the testing system of Mahajan in order to facilitate the desired feature of Guerra on the fly grammar updates (Guerra 0108).

Mahajan and Guerra do not specifically teach deriving a measure of how distinguishable the current grammar is from other grammars of the set of active grammars based at least in part on the analysis of the test pattern.

In the same field of speech recognition, Shao teaches deriving a measure of how distinguishable the current grammar is from other grammars of the set of active grammars based at least in part on the analysis of the test pattern (Figure 4, paragraph 0046, ambiguity ratio determine how distinguishable best fit is from second best fit).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the art to use an ambiguity ratio as taught by Shao in the system of Mahajan and Guerra in order to help determine if the grammar has be successfully recognized.

But Mahajan and Guerra and Shao do not teach specifically using a text to speech engine to enter data into the voice porthole.

In the same field of speech signal testing, Randic teaches using a text to speech engine to generate test signals for a system (Figure 1 shows using a voice test file generated by a TTS engine used to test the voice path using recognition. This is a similar technique used to test the quality of recognition in Mahajan. Using a computer generated voice to generate the test file, Column 3 line 27, would inherently allow the test pattern to emulate whatever voice the computer generation system was configured to produce.).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use the computerized speech generation as taught by Randic in place of the human speaker as taught by Mahajan and Guerra and Shao in order to allow for more efficient and more comprehensive quality analysis of the recognizer.

23. Claim 14 is directed towards a system similar to the method of claim 2 and is therefore rejected for similar reasons.

24. Consider claim 15, Mahajan and Guerra in view of Randic teaches the system of claim 13, but does not specifically teach modifying the test pattern to emulate one or more user voices prior to entering the test input into the voice portal.

However Randic teaches modifying the test pattern to emulate one or more user voices prior to entering the test input into the voice portal (Figure 1 shows using a voice test file generated by a TTS engine used to test the voice path using recognition. This is a similar technique used to test the quality of recognition in Mahajan. Using a

computer generated voice to generate the test file, Column 3 line 27, would inherently allow the test pattern to emulate whatever voice the computer generation system was configured to produce. Further, it is well known in the art that TTS engines can be configured to allow for the generation of multiple voice types, although the claim language suggest that just one voice could be used.).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use the computerized speech generation as taught by Randic to emulate a user voice in order to allow for more efficient and more accurate quality analysis of the recognizer.

25. Consider claim 16, Mahajan teaches the system of claim 13, wherein the test pattern generator is modified to emulate the influence of one or more communications network qualities prior to entering the test input into the voice portal. (figure 3 shows passing the voiced speech pattern through a transmission scheme in order to evaluate the effect that the voice channel has on recognition; column 4, line 31- column 7 line 29.).

26. Consider claim 17, Mahajan teaches an analysis interface for extracting a set of current grammars from the voice system a portion of training text is selected to be spoken 304, Figure 3, Column 5 line 11.);

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DOUGLAS C. GODBOLD whose telephone number is (571)270-1451. The examiner can normally be reached on Monday-Thursday 7:00am-4:30pm Friday 7:00am-3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on (571) 272-7602. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DCG

/Richemond Dorvil/
Supervisory Patent Examiner, Art Unit 2626